REMARKS

Claims 1 – 5, 14, and 16 -20 are pending. The Examiner has withdrawn claims 9 – 13 and 21 – 37. Claim 15 has been cancelled. Claims 1, 3, 4, 14, 16, and 18 have been amended. No new matter has been added. Applicant respectfully requests reconsideration and reexamination of the presently pending claims.

In the December 15, 2006 Office Action, the Examiner rejected claims 1, 14, 16, and 17 under 35 U.S.C. § 102(b) as being anticipated by each of EP Patent No. 1198058 to Mitsubishi et al. ("the Mitsubishi reference"), U.S. Patent No. 6,411,535 to Roux ("the Roux reference"), and U.S. Patent No. 4,412,277 to Mitchell ("the Mitchell reference"). The Examiner rejected claims 2 and 18 – 20 under 35 U.S.C. § 103(a) as being unpatentable over the Mitsubishi reference in view of U.S. Patent No. 5,642,267 to Brkovic ("the Brkovic reference"). The Examiner rejected claims 3 – 5 and 14 – 17 under 35 U.S.C. § 103(a) as being unpatentable over the Mitsubishi reference in view of U.S. Patent No. 6,420,935 to Harris et al. ("the Harris reference"). The applicant respectfully traverses these rejections in respect to the presently pending claims.

Claim 1, as amended, recites:

> A bi-directional boost circuit for power factor correction, comprising:
> a first diode, a second diode, a first inductor, a second inductor, a first switch, and a second switch to convert an AC input voltage, rectify the AC input voltage, and output an intermediate DC voltage; and
> a power factor control circuit, the power factor circuit including
> a waveform generator to receive the AC input voltage and generate a haversign waveform;
> **a pulse width modulator to generate a pulsed signal based on the intermediate DC voltage;**
> **a multiplier to multiply the haversign waveform and the pulsed signal and to create a multiplied haversign signal;**
> **an integrator to strip off the high frequency characteristics of the multiplied haversign signal to create a haversign signal;**

a first control circuit to compare a magnitude of the haversign signal is compared to a magnitude of the first inductor current to generate a first drive signal; and

a second control circuit to compare a magnitude of the haversign signal to a magnitude of the second inductor current to generate a second drive signal, which controls an inductor current waveform to form a substantially sinusoidal waveform that is in phase with the AC input voltage.

The Mitsubishi reference does not disclose the boost circuit of claim 1, as amended. The Mitsubishi reference discloses that a multiplier 11 receives an voltage error signal supplied from the output voltage error amplifier 9 and the sine wave reference waveform supplied from the power source synchronization circuit (which had received the AC input voltage). The multiplier outputs a resultant amplified output voltage error signal. The Mitsubishi reference also discloses a current error amplifier 12 that receives the actual current from a current detection shunt resistor 6 and the amplified output voltage error signal supplied from the multiplier 11, then compares them, amplifies the error between them, and outputs an amplified current error signal. The Mitsubishi reference further discloses that a comparator receives a triangular wave 13 and the amplified current error signal, compares them, and outputs a PWM drive signal. A PWM drive circuit receives the PWM drive signal from the comparator and switches the switching elements 5a and 5b according to the PWM drive signal. *(Mitsubishi, paragraphs [0036 and 0037]).*

This is not the same as a bi-directional boost circuit for power factor correction, including **a pulse width modulator to generate a pulsed signal based on the intermediate DC voltage, a multiplier to multiply the haversign waveform and the pulsed signal and to create a multiplied haversign signal and an integrator to**

strip off the high frequency characteristics of the multiplied haversign signal to create a haversign signal. It is the not the same because even though the Mitsubishi reference discloses a pulse width modulator, the Mitsubishi reference does not generate a pulsed signal that is based on the DC intermediate voltage, as is recited in claim 1, as amended. Instead, the Mitsubishi reference's PWM compares a triangular wave 13 and an amplified current error signal supplied from the current error amplifier. In addition, the Mitsubishi reference does not disclose that a multiplier multiplies the haversign waveform and the pulsed signal, as is recited in claim 1, because the Mitsubishi multiplier multiplies the haversign signal and the output voltage error signal. In other words, the Mitsubishi reference is using a multiplier much earlier in the circuit, i.e., in a first step, whereas claim 1's multiplier is used to multiply the haversign waveform to a pulse width modulated signal. Further, the Mitsubisi reference does not disclose or teach an integrator, nor does it disclose that the integrator strips off high frequency characteristics of the multiplied haversign signal to create a haversign signal. Accordingly, the applicant respectfully submits that claim 1, as amended, distinguishes over the Mitsubishi reference.

Similarly, the Mitchell reference does not disclose the a bi-directional boost circuit for power factor correction, including **a pulse width modulator to generate a pulsed signal based on the intermediate DC voltage, a multiplier to multiply the haversign waveform and the pulsed signal and to create a multiplied haversign signal and an integrator to strip off the high frequency characteristics of the multiplied haversign signal to create a haversign signal.** The Mitchell reference discloses that the AC input voltage and the output voltage are multiplied which is not

the same as multiplying the haversign waveform and the pulsed signal (from a pulse width modulator) multiplied, as is recited in claim 1. Further, the Mitchell reference does not disclose an integrator nor that an integrator strips off high frequency characteristics of the multiplier haversign signal. Accordingly, applicant respectfully submits that claim 1, as amended, distinguishes over the Mitchell reference, alone or in combination, with the Mitsubishi reference.

The Roux reference does not make up for the deficiencies of the Mitchell and Mitsubishi references. The Roux reference does not disclose a pulse width modulator, a multiplier, and an integrator, nor the functions recited for each of the pulse width modulator, multiplier, and integrator in claim 1, as amended. Accordingly, applicant respectfully submits that claim 1, as amended, distinguishes over the Roux reference, alone or in combination, with the Mitchell and Mitsubishi references.

The Brkovic and Harris references do not make up for the deficiencies of the previously cited references. The Examiner utilizes the Brkovic reference to disclose the use of an automatic current shaping waveform generator and the Harris reference to disclose the use of a haversign signal. *(Office Action, pages 4 and 5)*. Assuming, *arugendo*, that the Brkovic and Harris references disclose all that the Examiner states that they do, the Brkovic and Harris references do not disclose a bi-directional boost circuit for power factor correction, including **a pulse width modulator to generate a pulsed signal based on the intermediate DC voltage, a multiplier to multiply the haversign waveform and the pulsed signal to create a multiplied haversign signal, and an integrator to strip off the high frequency characteristics of the multiplied haversign signal to create a haversign signal**, as is recited in claim 1, as amended.

Accordingly, applicant respectfully submits that claim 1, as amended, distinguishes over the Brkovic and Harris references, alone or in combination, with the Mitsubishi, Mitchell, and Roux references.

Independent claims 14 and 18, both as amended, recite limitations similar to claim 1, as amended. Accordingly, applicant respectfully submits that claims 14 and 18 distinguish over the Mitsubishi, Mitchell, Roux, Brkovic, and Harris references, alone or in combination, for reasons similar to those discussed above in regard to claim 1.

Claims 2 – 5, 16 – 17, and 19 – 20, depend, indirectly or directly, on claims 1, 14, and 18, respectively. Accordingly, applicant respectfully submits that claims 2 – 5, 16 – 17, and 19 – 20 distinguish over the cited references for the same reasons as those discussed above in regard to claim 1.

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Applicant believes that all of the claims are in condition for allowance, and a favorable action is respectfully requested. If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Los Angeles telephone number (213) 488-7100 to discuss the steps necessary for placing the application in condition for allowance should the Examiner believe that such a telephone conference would advance prosecution of the application.

Respectfully submitted,

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